WHAT IS CLAIMED IS:

1. A white light illumination system comprising:

a light emitting diode;

a first luminescent material having a peak emission wavelength of about 575 to about 620 nm; and

a second luminescent material having a peak emission wavelength of about 495 to about 550 nm, which is different from the first luminescent material; and

a third luminescent material having a peak emission wavelength of about 420 to about 480 nm, which is different from the first and second luminescent materials.

2. The system of claim 1, wherein the white light emitted by the system lacks any significant visible component emitted by the light emitting diode.

3. The system of claim 1, wherein the light emitting diode peak emission wavelength is 360 to 420 nm.

4. The system of claim 3, wherein the light emitting diode comprises an InGaN active layer having a peak emission wavelength is between 370 and 405 nm.

5. The system of claim 1, wherein the radiation emitted by the light emitting diode does not significantly penetrate through the first, second and third luminescent materials.

6. The system of claim 1, further comprising a fourth luminescent material having a peak emission wavelength of about 620 nm to about 670 nm.

7. The system of claim 1, wherein the first luminescent material comprises a first APO:Eu^{2+},Mn^{2+} phosphor, where A comprises at least one of Sr, Ca, Ba or Mg.

8. The system of claim 7, wherein:

the first phosphor comprises $(A_{1-x-y}Eu_xMn_y)_2 P_2 O_7$;

where A comprises Sr;

$0 < x \leq 0.2$; and

$0 < y \leq 0.2$.

9. The system of claim 7, wherein the second luminescent material comprises a second phosphor selected from at least one of:

a) an ASiO:Eu^{2+} phosphor, where A comprises at least one of Ba, Ca, Sr or Mg;

b) an ADSiO:Eu^{2+} phosphor, where A comprises at least one of Ba, Ca or Sr and D comprises at least one of Mg or Zn; or

c) an AAlO:Eu^{2+} phosphor, where A comprises at least one of Ba, Sr or Ca.

10. The system of claim 9, wherein:

the ASiO:Eu^{2+} phosphor comprises an $(A_{1-x}Eu_x)_2SiO_4$ phosphor, where A comprises Ba, Sr and Ca and $0 < x \leq 0.2$;

the ADSiO:Eu^{2+} phosphor comprises an $(A_{1-x}Eu_x)_2 DSi_2O_7$ phosphor, where $0 < x \leq 0.2$; or

the AAlO:Eu^{2+} phosphor comprises an $(A_{1-x}Eu_x) Al_2O_4$ phosphor, where $0 < x \leq 0.2$.

11. The system of claim 9, wherein the third luminescent material comprises a third phosphor selected from at least one of:

d) an $AMgAlO:Eu^{2+}$ phosphor where A comprises at least one of Ba, Ca or Sr;

e) a $DPOCl:Eu^{2+}$ phosphor where D comprises at least one of Sr, Ba, Ca or Mg;

f) an $EO*AlO:Eu^{2+}$ phosphor, where E comprises at least one of Ba, Sr or Ca;

g) an $EAlO:Eu^{2+}$ phosphor, where E comprises at least one of Ba, Sr or Ca; or

h) $GAlO:Eu^{2+}$ phosphor, where G comprises at least one of K, Li, Na or Rb.

12. The system of claim 11, wherein:

the $AMgAlO:Eu^{2+}$ phosphor comprises $(A_{1-x}Eu_x)Mg_2Al_{16}O_{27}$, where A comprises Ba and $0 < x \leq 0.2$;

the $DPOCl:Eu^{2+}$ phosphor comprises $(Sr_{1-y-z}\ Ba_y\ Ca_z)_{5-x}Eu_x\ (PO_4)_3Cl$, where $0.01 \leq x \leq 0.2$, $0 \leq y \leq 0.1$ and $0 \leq z \leq 0.1$;

the $EO*AlO:Eu^{2+}$ phosphor comprises $z(Ba_{1-x}Eu_x)O*6Al_2O_3$, where $1 \leq z \leq 1.8$ and $0 < x \leq 0.2$;

the $EAlO:Eu^{2+}$ phosphor comprises $(Ba_{1-x}Eu_x)Al_{12}O_{19}$, where $0 < x \leq 0.2$; or

the $GAlO:Eu^{2+}$ phosphor comprises $(K_{1-x}Eu_x)Al_{11}O_{11.07}$, where $0 < x \leq 0.2$.

13. The system of claim 11, wherein:

the first phosphor, the second and the third phosphor are interspersed in a phosphor blend;

the light emitting diode peak emission wavelength is about 360 to about 420 nm; and

the white light emitted by the phosphor blend in response to incident light emitting diode radiation comprises a color temperature between 3000K and 6500K, a CRI above 70 and an efficacy above 300 lm/W.

14. The system of claim 13, wherein the phosphor blend comprises:

about 55 to about 75 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 11 to about 22 weight percent $(Ba,Sr,Ca)_2SiO_4$:Eu^{2+} phosphor; and

about 13 to about 22 weight percent $(Sr,Ba,Ca,Mg)_5(PO_4)_3Cl$:$Eu^{2+}$ phosphor.

15. The system of claim 14, wherein:

the radiation source comprises an LED having a peak emission wavelength of about 380 nm; and

the phosphor blend comprises:

about 57.5 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 21.5 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor; and

about 21 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl$:Eu^{2+} phosphor.

16. The system of claim 14, wherein:

the radiation source comprises an LED having a peak emission wavelength of about 390 nm; and

the phosphor blend comprises:

about 61.4 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 19.4 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor; and

about 19.2 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl$:Eu^{2+} phosphor.

17. The system of claim 14, wherein:

the radiation source comprises an LED having a peak emission wavelength of about 405 nm; and

the phosphor blend comprises:

about 73.7 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 12.1 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor; and

about 14.2 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor.

18. The system of claim 11, further comprising a fourth phosphor comprising $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$.

19. The system of claim 18, wherein:

the first phosphor, the second, the third phosphor and the fourth phosphor are interspersed in a phosphor blend;

the light emitting diode peak emission wavelength is about 360 to about 420 nm; and

the white light emitted by the phosphor blend in response to incident light emitting diode radiation comprises a color temperature between 3000K and 4100K, a CRI above 90 and an efficacy of above 200 lm/W.

20. The system of claim 19, wherein the phosphor blend comprises:

about 11 to about 43 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 9 to about 15 weight percent $(Ba,Sr,Ca)_2SiO_4:Eu^{2+}$ phosphor;

about 6 to about 14 weight percent $(Sr,Ba,Ca,Mg)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and

about 30 to about 71 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$ phosphor.

21. The system of claim 20, wherein:

the radiation source comprises an LED having a peak emission wavelength of about 380 nm; and

the phosphor blend comprises:

about 12.7 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 10 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor;

about 7.4 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and

about 69.9 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$.

22. The system of claim 20, wherein:

the radiation source comprises an LED having a peak emission wavelength of about 390 nm; and

the phosphor blend comprises:

about 17.6 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 11.8 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor;

about 9 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and

about 61.6 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$.

23. The system of claim 20, wherein:

the radiation source comprises an LED having a peak emission wavelength of about 405 nm; and

the phosphor blend comprises:

about 41.5 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 14.2 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor;

about 12.8 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and

about 31.5 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$.

24. The system of claim 13, further comprising:

a shell containing a light emitting diode;

an encapsulating material between the shell and the light emitting diode; and wherein:

a) the phosphor blend is coated over a surface of the light emitting diode;

b) the phosphor blend is interspersed in the encapsulating material; or

c) the phosphor blend is coated onto the shell.

25. A white light emitting phosphor blend comprising at least three phosphors, wherein the white light emitted by the phosphor blend in response to incident radiation having a peak wavelength between 360 and 420 nm comprises a color temperature between 3000K and 6500K, a CRI above 70 and an efficacy above 200 lm/W.

26. The phosphor blend of claim 25, wherein the efficacy is above 264 lm/W and the color temperature is between 3300K and 4100K for incident radiation having a peak wavelength between 370 and 405 nm.

27. The phosphor blend of claim 26, wherein the efficacy is above 340 lm/W.

28. The of claim 27, wherein the phosphor blend comprises:

about 55 to about 75 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 11 to about 22 weight percent $(Ba,Sr,Ca)_2SiO_4$:Eu^{2+} phosphor; and

about 13 to about 22 weight percent $(Sr,Ba,Ca,Mg)_5(PO_4)_3Cl$:$Eu^{2+}$ phosphor.

29. The phosphor blend of claim 28, wherein the phosphor blend comprises:
about 57.5 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;
about 21.5 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor; and
about 21 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor.

30. The phosphor blend of claim 28, wherein the phosphor blend comprises:
about 61.4 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;
about 19.4 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor; and
about 19.2 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor.

31. The phosphor blend of claim 28, wherein the phosphor blend comprises:
about 73.7 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;
about 12.1 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor; and
about 14.2 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor.

32. The phosphor blend of claim 26, wherein the CRI is above 90.

33. The phosphor blend of claim 32, further comprising a fourth phosphor comprising $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$.

34. The phosphor blend of claim 32, wherein the phosphor blend comprises:
about 11 to about 43 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;
about 9 to about 15 weight percent $(Ba,Sr,Ca)_2SiO_4:Eu^{2+}$ phosphor;
about 6 to about 14 weight percent $(Sr,Ba,Ca,Mg)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and
about 30 to about 71 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$ phosphor.

35. The phosphor blend of claim 34, wherein the phosphor blend comprises:

about 12.7 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 10 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor;

about 7.4 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and

about 69.9 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$ phosphor.

36. The phosphor blend of claim 34, wherein the phosphor blend comprises:

about 17.6 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 11.8 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor;

about 9 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and

about 61.6 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$ phosphor.

37. The phosphor blend of claim 34, wherein the phosphor blend comprises:

about 41.5 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor;

about 14.2 weight percent $(Ba_{0.65},Sr_{0.2},Ca_{0.1}Eu_{0.05})_2SiO_4$ phosphor;

about 12.8 weight percent $(Sr,Ba,Ca)_5(PO_4)_3Cl:Eu^{2+}$ phosphor; and

about 31.5 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$ phosphor.

38. A white light illumination system, comprising:

a radiation source;

a first $APO:Eu^{2+},Mn^{2+}$ phosphor, where A comprises at least one of Sr, Ca, Ba or Mg;

a second phosphor selected from at least one of:

a) an $ASiO:Eu^{2+}$ phosphor, where A comprises at least one of Ba, Ca, Sr or Mg;

b) an $ADSiO:Eu^{2+}$ phosphor, where A comprises at least one of Ba, Ca or Sr and D comprises at least one of Mg or Zn; or

c) an $AAlO:Eu^{2+}$ phosphor, where A comprises at least one of Ba, Sr or Ca; and

a third phosphor selected from at least one of:

d) an $AMgAlO:Eu^{2+}$ phosphor where A comprises at least one of Ba, Ca or Sr; or

e) a $DPOCl:Eu^{2+}$ phosphor where D comprises at least one of Sr, Ba, Ca or Mg;

f) an $EO*AlO:Eu^{2+}$ phosphor, where E comprises at least one of Ba, Sr or Ca;

g) an $EAlO:Eu^{2+}$ phosphor, where E comprises at least one of Ba, Sr or Ca; or

h) $GAlO:Eu^{2+}$ phosphor, where G comprises at least one of K, Li, Na or Rb.

39. The system of claim 38, wherein:

the first phosphor comprises $(A_{1-x-y}Eu_xMn_y)_2 P_2 O_7$, where A comprises Sr, $0 < x \leq 0.2$ and $0 < y \leq 0.2$;

the $ASiO:Eu^{2+}$ phosphor comprises an $(A_{1-x}Eu_x)_2SiO_4$ phosphor, where A comprises Ba, Sr and Ca and $0 < x \leq 0.2$;

the $ADSiO:Eu^{2+}$ phosphor comprises an $(A_{1-x}Eu_x)_2 DSi_2O_7$ phosphor, where $0 < x \leq 0.2$;

the $AAlO:Eu^{2+}$ phosphor comprises an $(A_{1-x}Eu_x) Al_2O_4$ phosphor, where $0 < x \leq 0.2$;

the $AMgAlO:Eu^{2+}$ phosphor comprises $(A_{1-x}Eu_x)Mg_2Al_{16}O_{27}$, where A comprises Ba and $0 < x \leq 0.2$;

the $DPOCl:Eu^{2+}$ phosphor comprises $(Sr_{1-y-z}\ Ba_y\ Ca_z\ )_{5-x}Eu_x\ (PO_4)_3Cl$, where $0.01 \leq x \leq 0.2$, $0 \leq y \leq 0.1$ and $0 \leq z \leq 0.1$;

the $EO*AlO:Eu^{2+}$ phosphor comprises $z(Ba_{1-x}Eu_x)O*6Al_2O_3$, where $1 \leq z \leq 1.8$, and $0 < x \leq 0.2$;

the $EAlO:Eu^{2+}$ phosphor comprises $(Ba_{1-x}Eu_x)Al_{12}O_{19}$, where $0 < x \leq 0.2$; or

the GAlO:Eu^{2+} phosphor comprises $(K_{1-x}Eu_x)Al_{11}O_{11.07}$, where $0 < x \leq 0.2$; and

further comprising a fourth $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$ phosphor.

40. The system of claim 39, wherein:

the illumination system comprises an LED lamp, a fluorescent lamp or a plasma display; and

the radiation source comprises an LED chip or a gas contained in the fluorescent lamp or a plasma display;

41. A method of making a white light illumination system, comprising:

blending a first phosphor powder having a peak emission wavelength of about 575 to about 620 nm, a second phosphor powder having a peak emission wavelength of about 495 to about 550 nm, and a third phosphor powder having a peak emission wavelength of about 420 to about 480 nm to form a phosphor powder mixture; and

placing the phosphor powder mixture into the white light illumination system adjacent a light emitting diode.

42. The method of claim 41, further comprising selecting an amount of the first, second and third phosphor powders such that the white light emitted by the phosphor powder mixture in response to incident radiation having a peak wavelength between 360 and 420 nm comprises a color temperature between 3000K and 6500K, a CRI above 70 and an efficacy of above 200 lm/W.

43. The method of claim 42, wherein the step of selecting comprises:

selecting about 55 to about 75 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor powder;

selecting about 11 to about 22 weight percent $(Ba,Sr,Ca)_2SiO_4:Eu^{2+}$ phosphor powder; and

selecting about 13 to about 22 weight percent $(Sr,Ba,Ca,Mg)_5(PO_4)_3Cl:Eu^{2+}$ phosphor powder in order to achieve an efficacy above 346 lm/W.

44. The method of claim 42, wherein the step of selecting comprises:

selecting about 11 to about 43 weight percent $Sr_2P_2O_7$: Eu^{2+}, Mn^{2+} phosphor powder;

selecting about 9 to about 15 weight percent $(Ba,Sr,Ca)_2SiO_4:Eu^{2+}$ phosphor powder;

selecting about 6 to about 14 weight percent $(Sr,Ba,Ca,Mg)_5(PO_4)_3Cl:Eu^{2+}$ phosphor powder; and

selecting about 30 to about 71 weight percent $3.5MgO*0.5MgF_2*GeO_2:Mn^{4+}$ phosphor powder in order to achieve a CRI above 90.

45. The method of claim 42, further comprising:

placing the light emitting diode having a peak emission wavelength between 370 and 405 nm into a shell;

filling the shell with an encapsulating material; and

a) coating a suspension of the phosphor powder mixture and a solvent over a surface of the light emitting diode and drying the suspension;

b) interspersing the phosphor powder mixture in the encapsulating material; or

c) coating a suspension of phosphor powder mixture and a solvent onto the shell and drying the suspension.